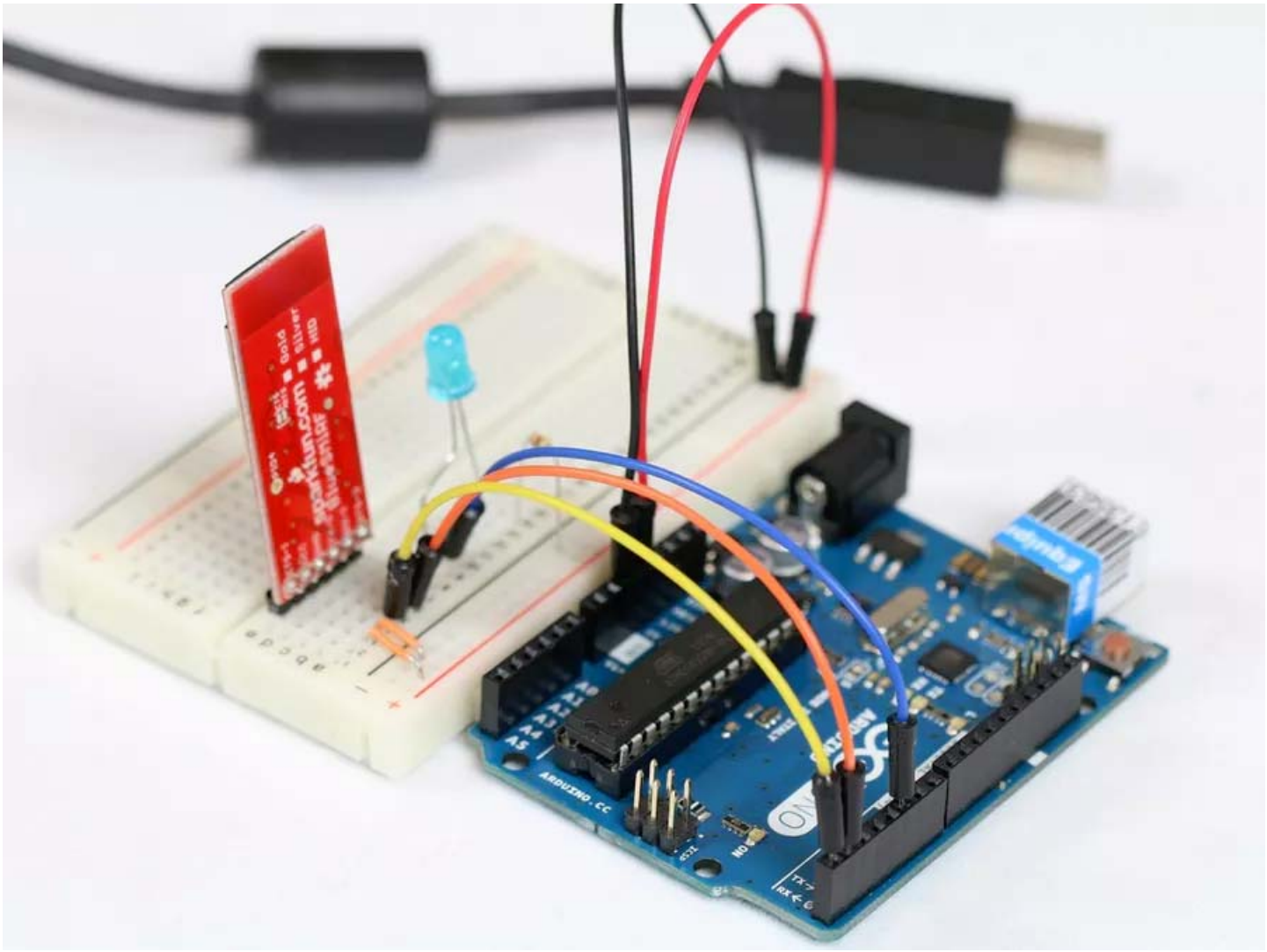
Windows Remote Arduino

Made by Windows IoT (Windows IoT (/windowsiot), Jesse Frush (/turkycat), and Zachary J. Fields (/zachary_fields)) - Published in Arduino (/arduino), Microsoft (/microsoft), and SparkFun (/sparkfun)



ABOUT THIS PROJECT

Turn an LED on and off using Windows Remote Arduino.

windows (/projects/tags/windows) **wifi (/projects/tags/wifi)** **remote (/projects/tags/remote)**

internet of things (/projects/tags/internet+of+things) **ethernet (/projects/tags/ethernet)** **bluetooth (/projects/tags/bluetooth)**

arduino (/projects/tags/arduino)

PROJECT INFO

Type	Full instructions provided
Difficulty	**Easy (/projects?difficulty=beginner)**
Published	May 3, 2015

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THINGS USED IN THIS PROJECT

Hardware components:

	Arduino UNO & Genuino UNO (/arduino/products/arduino-uno-genuino-uno)	×	1	(https://store.arduino.cc/product/GBX00066)
	BlueSMiRF Bluetooth Modem	×	1	(https://www.sparkfun.com/products/12577)
	LED (generic)	×	1	(https://www.sparkfun.com/products/9590)
	Male/Male Jumper Wires	×	1	(http://octopart.com/ada758-adafruit+industries-27056343)
	330Ω Resistor	×	1	

STORY

In this project, we will use Windows Remote Arduino to turn an LED on and off. It is a simple example, but will reveal the power that the library can give you to create many more advanced projects. Let's get started!

You can download the "samples" repository here (https://github.com/ms-iot/windows-remote-arduino-samples). This sample is "RemoteBlinky" inside the appropriate platform folder, either Win10 or Win8.1. Make sure to clone the repository **recursively** so that you also obtain a copy of the library (more info in the readme)! The downloadable sample includes code for both USB and Bluetooth connections, while this guide mainly covers Bluetooth (with some short USB asides) since it involves extra hardware steps and is just so much more awesome.

It is also possible to connect to your Arduino through the network, but you'll require a WiFi shield or Ethernet shield. Further instructions can be found on the Windows Remote Arduino repository page, linked directly below.

Read more

If you'd prefer to create your own project, follow the project set up guide here (http://ms-iot.github.io/content/en-

CODE

Windows Remote Arduino Samples

ms-iot (https://github.com/ms-iot) / **windows-remote-arduino-samples (https://github.com/ms-iot/windows-remote-arduino-samples)**

Samples for Windows Remote Arduino — Read More (https://github.com/ms-iot/windows-remote-arduino-samples#readme)

Latest commit to the **master** branch on 12-7-2016

Download as zip (https://github.com/ms-iot/windows-remote-arduino-samples/archive/develop.zip)

CREDITS

Windows IoT (/windowsiot)

We want to transform lives by connecting people, processes and objects. Build what matters most to you. Create the I Things.

(/windowsiot)

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Jesse Frush (/turkycat)

(/turkycat)

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Zachary J. Fields (/zachary_fields)

I like to make stuff.

(/zachary_fields)

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REPLICATIONS

Did you replicate this project? Share it!

I made one

Love this project? Think it could be improved? Tell us what you think!

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COMMENTS

Please log in (/users/sign_in?id=9586&m=base_article&reason=comment&redirect_to=%2Fwindowsiot%2Fbasic-windows-remote-arduino-47eeb9%23comments) or sign up (/users/sign_up?id=9586&m=base_article&reason=comment&redirect_to=%2Fwindowsiot%2Fbasic-windows-remote-arduino-47eeb9%23comments&source=popup) to comment.

(/timcavanaugh) **Tim Cavanaugh (/timcavanaugh)**
2 years ago

Is there is link somewhere to download the sample code for this project? Also, the article doesn't explain what needs to be loaded on the Arduino -- is it just Firmata?

(/synergy-plasma-6) **Phillip Dimond (/synergy-plasma-6)**
2 years ago

This example does not seem to be there, but generally Microsoft seems to post all the code to https://github.com/ms-iot/samples (https://github.com/ms-iot/samples)


(/turkycat) **Jesse Frush (/turkycat)**
2 years ago

Thanks for pointing that out! I've now included a link to sample code in two places. Right now, the repository only contains this RemoteBlinky project, but will continue to be beefed up with new examples!
You can find it in https://github.com/ms-iot/windows-remote-arduino-samples (https://github.com/ms-iot/windows-remote-arduino-samples)

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
2 years ago

StandardFirmata.ino from the Arduino IDE is all that is needed on the Arduino.

(/moinism) **Moin Uddin (/moinism)**
2 years ago

You do not need to use PIN 0 and 1. That would always be a problem when loading new code and we cannot just unpin to load the code and pin again.
Use any other Pins like 9 & 10 and define that in your code.

P.S: Would be great to have the code in code format. Instead of screenshot.


(/turkycat) **Jesse Frush (/turkycat)**
2 years ago

The Firmata implementation on Arduino uses HardwareSerial (known to the Arduino user as just Serial). It does not use SoftwareSerial which allows for defined pins to be used (but typically has much lower performance). While it is possible to modify the Firmata library to use SoftwareSerial, it would require many additional steps which are not covered here 😉

I have also added links to the samples!

I have also added links to the samples!

(/straylight-cool-3) **Joe Healy (/straylight-cool-3)**
2 years ago

er, how about links about adding the little sparkfun board in and such? getting the basic hw setup first?

> (/zachary_fields) **Zachary J. Fields (/zachary_fields)**
> 2 years ago
>
> There are pictures at the top of the post illustrating how to wire up the device. Does this help, or are you asking about something else?

(/leela-clone-5) **Angel Javier Samaniego Gonzalez (/leela-clone-5)**
2 years ago

Someone try to move a servo with this release of windows remote arduino or at this time dont have the function, because I set the pin mode to SERVO, and send the position using the analogwrite(pin,value); but the servo don't move, I try this because i see the function in the standardfirmata in arduino and make my little reverse engineering, in firmata when i set the pin mode to Servo, the the analogwrite function of firmata have a switch case with the verification of the pin mode for Servo. I use a Arduino Mega 2560

>  (/turkycat) **Jesse Frush (/turkycat)**
> 2 years ago
>
> Hey Angel! I'm glad to see you're doing some interesting things with Windows Remote Arduino! You're absolutely correct, the Firmata library does have a command for servo control, and the StandardFirmata sketch has a case statement handling that command. At this time, RemoteDevice will allow you to set the pin to any mode you choose, but we haven't yet added the servo command feature directly into the RemoteDevice class.
>
> However, you could still accomplish what you are attempting to do by sending the proper command message using the UwpFirmata class! UwpFirmata allows you to directly interface with the Firmata protocol. For more information on this, refer to the advanced usage guide here: https://github.com/ms-iot/remote-wiring/blob/master/advanced.md (https://github.com/ms-iot/remote-wiring/blob/master/advanced.md)
>
> We do have plans to add the servo functionality, and you can certainly count on it being added in a future update.

(/thejayman77) **Jason Hegedus (/thejayman77)**
2 years ago

Has anyone attempted using the I2c functionality yet? I'm a little lost as to the exact process in comparison to the regular Arduino environment. I am seemingly about to write via I2c, but am not receiving any responses. I may not being doing things properly, so was hoping someone may have a simple example.

Much thanks for any guidance.

> (/thejayman77) **Jason Hegedus (/thejayman77)**
> 2 years ago
>
> About = able

About – able

 (/turkycat) **Jesse Frush (/turkycat)**
2 years ago

Hey Jason! Have you subscribed to the I2cReplyEvent on the I2C object? If your "RemoteDevice" object was named 'device', the C# syntax would look like:
device.I2c.I2cReplyEvent += MyI2cReplyCallback;

private void MyI2cReplyCallback(byte address, string response) { ... }

We're working to get a sample out that will demonstrate some basic functionality of I2C, but I'm glad to see you forging ahead and trying it yourself!

(/thejayman77) **Jason Hegedus (/thejayman77)**
2 years ago

Thanks again for the quick reply!

I'm using C++, so had things a little differently. I setup an event:
arduino->I2c->I2cReplyEvent += ref new I2c::I2cReplyCallback(myReplyEvt);

void myReplyEvt(unsigned char address, Platform::String^ myResp)
{
myReader = myResp;
myAddy = address;

```
  arduino->digitalWrite(13, PinState::LOW);
```

}

Just trying to do something simple. I would imagine even if I had the order of commands wrong, I should be able to read something. I'm testing a BMP085 sensor I had lying around.

(/thejayman77) **Jason Hegedus (/thejayman77)**
2 years ago

Well, I made some progress, apparently in desperation lol. I tested some other things out with PWM and an RGB LED and noticed that I needed to put the pinMode statements near the actual analogWrite commands. Though maybe this was due to scoping considering I'm really new to visual studio/Windows development.

At any rate, I managed to get an I2C response by hammering the BMP085 with read commands. I receive the correct output crazily enough. Essentially, I threw four i2cread command that each read 10 bytes a piece. This ran my i2c callback which turned off the onboard LED and returned the response.

I'll be messing around with this more now that things are getting released. I'm looking forward to figuring out SPI at some point in time.

 (/marcusmaker) **Marcus Olsson (/marcusmaker)**
2 years ago

Hummm... I'm stuck.
The app compile nicely in Win10/VS2015. I run via USB Cable and the on_connection event triggers fine.
I can see on the rx led on the board that it receives data.
But nothing happens...
I've verified the firmata functions with the "firmata_test.exe" program and it works fine.

I've verified the firmata functions with the "firmata_testsuite" program and it works fine.

I tried different ports - but no luck...

Any suggestions?

(/thejayman77) **Jason Hegedus (/thejayman77)**
2 years ago

What is the program attempting to do? I've been messing around with this for the last couple days and have made some decent progress. I have noticed some peculiarities, but managed some workarounds.

Sometimes if the board stops responding, it helps to disconnect/reconnect the USB. Also, try moving any pinMode commands close to the actual digital/analog write commands. I didn't see any output on my RGB LED until I made that change.

If you post some code, I might be able to shed some light, but definitely slow going for me too. 😊

 (/marcusmaker) **Marcus Olsson (/marcusmaker)**
2 years ago

I'm just trying to run the example in this article. I added some code to set the pin as an output, but still - nothing happens.

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
2 years ago

We've seen a problem where you actually need to send 30 extra bytes to the Arduino (maybe to flush a buffer) before it starts working properly when you are using USBSerial with an Uno.

 (/marcusmaker) **Marcus Olsson (/marcusmaker)**
2 years ago

I'll try to send some dummy commands first then.

 (/marcusmaker) **Marcus Olsson (/marcusmaker)**
2 years ago

I solved the problem! The standard baud rate for firmata is 57600 baud, not 115200. So when I changed the code to 57600 it worked - without sending any extra bytes.
This also explains my failure in using the Bluetooth "HC-06" adapter. It's baud rate defaults to 9600. That one also worked when I changed it to 57600.
Happy me 😊

(/thejayman77) **Jason Hegedus (/thejayman77)**
2 years ago

Crazy.. Good to find all these nuances.

I usually set my serial to 57600, so I guess I was fortunate to avoid that... But good to know for the future and othet devices at different baud rates.


(/nobodykid) **Muhamad Iqbal (/nobodykid)**
2 years ago

sorry to ask. I just clone the repo and try to open the sample in my VS. When i open the XAML it said "Design view is unavailable for x64 and ARM target platforms." what does it mean?

PS: also in the code, all the declarations are red-lined

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
2 years ago

That is a problem specific to Visual Studio 2015 in it's pre-release build. That doesn't have anything to do with the RemoteWiring library.

(/acid-glitch-3) **Giuseppe Palmieri (/acid-glitch-3)**
2 years ago

I can't read with an analogread(pin). It returns always 0.

Someone knows how to solve this?


(/turkycat) **Jesse Frush (/turkycat)**
2 years ago

Make sure you first call
pinMode(pin, PinMode.INPUT);
before attempting to read the pin

(/acid-glitch-3) **Giuseppe Palmieri (/acid-glitch-3)**
2 years ago

Already done. This is my code:
arduino.pinMode(pinLux, PinMode.INPUT);
text.Text = arduino.getPinMode(pinLux)+ "---" + arduino.analogRead(pinLux).ToString();

where pinLux=0 and the result is INPUT --- 0


(/turkycat) **Jesse Frush (/turkycat)**
2 years ago

I'm concerned about using pin 0, as it is the RX line for Serial inputs on Arduino. Both Bluetooth and USB should pull the line low (value 0) for pin 0 when they are connected. I would suggest using pin 2 or above and trying again.
If that is not the issue, my next guess is that you may be constructing UwpFirmata object yourself. Are you following the advanced guide located at the github repository for Windows Remote Arduino, or are you following the basic example above?


(/acid-titanium-12) **Giuseppe Palmieri (/acid-titanium-12)**


(/acid-titanium-12) 2 years ago

I'm using analog pin 0 not the digital one. I'm using an analog photocell but has remote device access to analog PINs?


(/turkycat) **Jesse Frush (/turkycat)**
2 years ago

one of the oddities of arduino is that the analog pins are actually numbered right above the digital. In other words, A0 Is actually pin 14 on an Uno since there are 14 digital pins. This is actually for the hardware itself, otherwise, the Arduino itself can't distinguish between digital pin 0 and analog 0.

Future improvements to the library will allow for the arduino to advertise it's pins and abilities so this will be easier. In the meantime, I will add a more detailed explanation to the WRA documentation.

(/acid-glitch-3) **Giuseppe Palmieri (/acid-glitch-3)**
2 years ago

Thank you!
i've done this, but now the response is always 257 on all analog PINs

---


(/turkycat) **Jesse Frush (/turkycat)**
2 years ago

Well, that means that the Arduino is actually sending you those values. The value of any pin set to PinMode.INPUT will be cached each time the StandardFirmata sketch reports the value. When you call analogRead (or digitalRead) you are given the value in the cache. If the Arduino never sent you any values, you would always get 0, because that is what the cache is initialized to.
If you are having trouble with your sensor or are concerned about the Arduino's functionality, I would suggest wiring an analog pin up to 5v and calling analogRead after doing so. Since analog pins have 10 bits of resolution, you can get a response in the range of [0, 1023], and with 5v you would expect 1023. If the pin is not hooked up to anything, there is no telling what value you may receive.

(/acid-glitch-3) **Giuseppe Palmieri (/acid-glitch-3)**
2 years ago

It returns me 257 also when Arduino is disconected


(/turkycat) **Jesse Frush (/turkycat)**
2 years ago

That is because the last value reported from the Arduino is stored in the cache as I described above. If you truly want reporting as real time as possible, subscribe to the AnalogPinUpdatedEvent.

(/thejayman77) **Jason Hegedus (/thejayman77)**
2 years ago

I'm having some similarly strange issues trying to get a SHT11 sensor working.

It works perfectly in the Arduino environment, but not so much for me in this Windows/Firmata setup. It appears

that its caching a multitude of lows and is reporting nothing back from the sensor. Maybe it's the code, but I have tried several attempts at getting some response and have only had slight progress when doing some manual testing.

I do believe subscribing to the pin change event will help; but that should be coded well so as to not miss any event and to react to those as necessary.

It still might be a problem for timing, but I guess you can just time every received bit and use that, though that may slow some things down when trying to process the inputs.

(/acid-glitch-3) **Giuseppe Palmieri (/acid-glitch-3)**
2 years ago

Direct 5V connection still gave me 257

(/thejayman77) **Jason Hegedus (/thejayman77)**
2 years ago

I have to do more testing still, but I can't help but think only internal changes are getting processed (i.e. digitalWrite to HIGH/LOW) as opposed to external events.

I subscribed to the DigitalPinUpdated event, and am only getting my function called when manually writing a pin HIGH. The function simply monitors any pin changes and sets a variable to true if anything is high. In jumpering 5V to pin 8 (Which is the pin I'm currently using) I get no change in the variable. Writing 8 to HIGH with digitalWrite changes the variable to true, signifying the change in pin state.

This is the third time this has happened to me, so perhaps I'm just doing something wrong. I had more complex examples that I eventually simplified just to test for this reason.

I would imagine that having a line such as: if (pinSt != PinState::LOW) pinHigh = true;
would be good enough to test that all the digital inputs are monitored correctly. With a jumper in place, 5V should pin the pin to HIGH (Pun intended). I used the Firmata test program, and it monitors pin changes immediately. I'm not sure where the difference is occurring.

(/thejayman77) **Jason Hegedus (/thejayman77)**
2 years ago

Also, just to clarify, my event function definition is:
pinUpdated(uint8_t pinNo, PinState pinSt);


(/turkycat) **Jesse Frush (/turkycat)**
2 years ago

could you send me the code you are using? jessefr@microsoft.com (mailto:jessefr@microsoft.com)


(/turkycat) **Jesse Frush (/turkycat)**
2 years ago

I just tested this again with the current build as well as the 'master' (1.0) release. When not connected to anything, all of my analog pins read noise values between 115 and 340 (results will vary), when connected to 5v I get 1023, and when connected to ground I get 0. When connected to a potentiometer, I am able to move the value smoothly between 0 and 1023 and back again. I am still happy to take a look at your code, but I'm not able to replicate your issue with either build.

able to replicate your issue with either build.

(/thejayman77) **Jason Hegedus (/thejayman77)**
2 years ago

In case anyone else is having problems with their Bluetooth working...

I am using an Adafruit Bluefruit EZ-Link Bluetooth module that was unable to interact with the Arduino using Firmata. After messing around with baud rates and attempting to use SoftwareSerial in Firmata, I came across a post recommending 9600 baud for Firmata (Which consequently happened to be the only one I didn't try). Everything worked after using that baud, finally!

So, if anyone else is having problems getting the Bluetooth to talk to their project, try the lower baud in the firmata sketch, flash, and try again.

1 thank

> (/foxsterc) **Dale Cebula (/foxsterc)**
> a year ago
>
> This also worked for me on an Arduino Due. Setting the 9600 baud for Firmata and for the sample, using a USB connection via the programming port.
>
> 1 thank

(/morpheus-algorithm-4) **Larry N. (/morpheus-algorithm-4)**
2 years ago

Thank you for the guide, now I can put my sparkfun module to good use 😉

 (/jamesbchin) **James Chin (/jamesbchin)**
2 years ago

Wow this is so cool I need to try this

(/acid-wiggin-3) **Philip Arny (/acid-wiggin-3)**
2 years ago

I'm gonna try this one -- I haven't played with bluetooth before, and this looks like an easy start. Who needs wires, right (well, other than jumpers).

 (/cwb) **Christopher Brandsdal (/cwb)**
a year ago

I am obviously doing something wrong. Running universal app on windows 10 mobile connecting to the sparkfun bluetooth device. I am able to connect to the device, but nothing seems to work when I try to send the digitalwrite command. No blinking on the RX-TX leds on the arduino. What could that be? I uploaded the StandardFirmata code to the Arduino Uno. Is there any way to debug this? I just love this setup! Gonna put it in my greenhose with my old Lumia 920.

(/thejayman77) **Jason Hegedus (/thejayman77)**
a year ago

You can try changing the firmata.begin speed in the firmata sketch to 9600 instead of the default 57600. This helped me with my Bluetooth adapter issues.

 (/turkycat) **Jesse Frush (/turkycat)**
a year ago

Jason is right, but the sparkfun bluesmirf uses 115200 as it's default baud. Make sure to change that on the standard firmata sketch!

 (/cwb) **Christopher Brandsdal (/cwb)**
a year ago

Worked like a charm! 115200 FTW. Thanks, both. 😄

 (/cwb) **Christopher Brandsdal (/cwb)**
a year ago

Back again. New day, new challanges! ☺
I'm trying to read a analog sensor that is supposed to give me a value between 0 and 1023. I'm trying to use the following code on my phone:

var a = arduino.analogRead(0);

I have connected the signal wire to A0 on the Uno. When I try to read the value just using python it works like a charm. What could be wrong? It just gives me the value of "65535" even when the sensor is supposed to return a different value...

 (/turkycat) **Jesse Frush (/turkycat)**
a year ago

First, make sure you are setting analog pins to PinMode.ANALOG, not PinMode.INPUT. Also, due to the way Arduino boards are set up, pin A0 is actually pin 14 on an Arduino Uno, so you need to specify it like that when using PinMode. It is a bit confusing, I understand. We are actively working on a solution which will simplify this behavior in the future. To read analog pin A0, you'd need to do the following:

arduino.pinMode(14, PinMode.ANALOG);
var a = arduino.analogRead(0);

for more information and a deep explanation, refer to the "working with analog" section of the readme at https://github.com/ms-iot/remote-wiring (https://github.com/ms-iot/remote-wiring)

 (/cwb) **Christopher Brandsdal (/cwb)**
a year ago

Thanks! I am still not able to get anything else than 65535... I have Uploaded the "StandardFirmata" to the Arduino. Is this correct?

1 thank

 (/cwb) **Christopher Brandsdal (/cwb)**
a year ago

This is my code. The first lines turns on the LED. 😊

```
private void OnButton_Click(object sender, RoutedEventArgs e)
{
arduino.pinMode(5, PinMode.OUTPUT);
//turn the LED connected to pin 5 ON
arduino.digitalWrite(5, PinState.HIGH);

        arduino.pinMode(14, PinMode.ANALOG);
        var a = arduino.analogRead(0);
    }
```

1 thank

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

-1 (or 65535) is the error return code from `analogRead()` . Are you using the master or development branch? I would suggest using development, we are about to release v1.1 and we have made some significant updates.

(/ManniAT) **Manfred Pohler (/ManniAT)**
a year ago

I use devel branch - but as reported in https://github.com/ms-iot/remote-wiring/issues/46 (https://github.com/ms-iot/remote-wiring/issues/46) the error still exists.

(/ender-flynn-10) **somnath banik (/ender-flynn-10)**
a year ago

Hi,
I don't have Windows 10 , can I run the project on Windows Phone 8.1 using Arduino ?

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

Yes. The remote-wiring library has both a a Windows 10 and Windows 8.1. In version 1.0 only Bluetooth works in Windows 8.1. However v1.1 is just around the corner and will support networking and BLE for the Phone in 8.1. Also v1.1 will be targeted for Visual Studio 2015 Community Edition (free).

(/ender-flynn-10) **somnath banik (/ender-flynn-10)**
a year ago

Thanks for your reply.
What I could get from this is that I can using "Windows Remote Arduino library" in my Windows Phone 8.1 RT apps and access the Arduino through Bluetooth. But now as far I know we also need to put some Sketch in Arduino, what is that? Is it just "Firmata" and this will take care of all the instruction from Mobile device to Arduino through Bluetooth and perform task?
If that is the case then don't I have to write Individual Sketch on Arduino for each of my projects like we do in

If that is the case then don't I have to write Individual Sketch on Arduino for each of my projects like we do in regular case. Or using "Firmata" is a generic code that communicates with the Windows Library and perform the task?

Please suggest me.

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

You are correct on StandardFirmata.ino, from Examples >> Firmata from the Arduino IDE needs to be installed on your Arduino (be sure to match baud rates).

If you want to use more advanced sysex transactions, then you would need to also make the corresponding updates to StandardFirmata.

(/ender-flynn-10) **somnath banik (/ender-flynn-10)**
a year ago

Thanks for your answer, but I have little more doubts, please have patience as I am new to this.

1. So if I install StandardFirmata.ino on Arduino then can I access any digital pin from my Mobile App through Bluetooth?
2. In general we write code in Arduino to Digital High/Low Pins, and the Pins are pre-defined in the Arduino Sketch, if I use the StandardFirmata.ino then will I be able to access any Pin without changing code in Arduino?
3. Is there any compiled library for Windows Remote Arduino or its the source code only?

Thanks

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

1. Yes
2. Yes
3. Unfortunately until Windows 10 is released this will be source only. We have detailed instructions showing you how to add it to your project.


(/saniljhaveri) **sanil jhaveri (/saniljhaveri)**
a year ago

can we use CC2564 ti board insted ?

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

If your board can run StandardFirmata.ino, or some other custom firmata parser/server, then yes you can.

(/sameerk) **Sameer (/sameerk)**
a year ago

If you want to create a cross platform project that works on both Windows and Android, try this out.

https://www.hackster.io/sameerk/smart-switch (https://www.hackster.io/sameerk/smart-switch)
It also has additional functionality to turn power on/off.

 (/sarthaksethi) **sarthak sethi (/sarthaksethi)**
a year ago

Can I also use it as a USB keyboard? I would really like to build a USB controlled joystick.

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

Yes, you can use the remote-wiring library (a.k.a. Windows Remote Arduino) to send signals from the Arduino to Windows (and vice-versa). In fact, we created a post for making a Windows joystick for the Arduino (https://www.hackster.io/windowsiot/windows-10-dfrobot-kit (https://www.hackster.io/windowsiot/windows-10-dfrobot-kit)).
Perhaps I could help you more, if you have more specific implementation in mind.

(/deomel) **Deo Melgaco (/deomel)**
a year ago

I have he same problem reported above with analogRead(). I am using the "develop" code (date of files is 7/29/15), and while I can turn on the led making the calls via firmata, the analogRead(0) does not work, it always returns 65535. I tested the standardfirmata using firmata_test.exe and it works just fine, the pot on port A0 (GPIO 14) is read consistently. But calls to analogRead(0) in my C# code don't. Code below:

```
byte LED_PIN = 3;
arduino.pinMode(LED_PIN, PinMode.OUTPUT);
arduino.digitalWrite(LED_PIN, PinState.HIGH); //this works just fine
arduino.pinMode(14, PinMode.ANALOG);
System.Diagnostics.Debug.WriteLine(">>>>>>>> Pin A0" + arduino.analogRead(0)); //this always prints 65535.
```

Help appreciated - thanks!

(/deomel) **Deo Melgaco (/deomel)**
a year ago

I did more tests on this, and apparently what is documented is not what really happens. This brings the correct readings from analogRead( ):

I have a potentiometer connected to A0 and a light sensor to A2. Code:

```
arduino.pinMode(0, PinMode.ANALOG);
arduino.pinMode(2, PinMode.ANALOG);
System.Diagnostics.Debug.WriteLine(">>> Pin A0 = " + arduino.analogRead(0));
System.Diagnostics.Debug.WriteLine(">>> Pin A2 = " + arduino.analogRead(2));
```

 (/turkycat) **Jesse Frush (/turkycat)**
a year ago

Hey Deo, can you explain how the documentation is different from your experienced behavior? Are you saying that setting the pinmode for pins 0 and 2 (without translating them to 14 and 16) allows you to correctly read the analog values when you call analogRead() on 0 and 2?

If this is the case, can you specify if you had reset your board between attempts at using { 14, 16 } and { 0, 2 }? The reason I ask, is that when you set a pin to INPUT or ANALOG, the board must report its values. Analog values are reported every 19ms by default. My thinking is that if you attempt to call pinMode(14, PinMode.ANALOG) followed -immediately- by analogRead(0), you may receive 65536 in the likely event that the read instruction is executed before the Arduino has been able to receive the pinMode command and report the value of pin A0. If your board is not reset between attempts, then the Arduino will happily keep reporting values which you are then able to read when you called analogRead(0) in the next run

---

(/deomel) **Deo Melgaco (/deomel)**
a year ago

[sorry, I had to edit a few times and the only way is to delete and post again...]

Hi Jesse - thanks for your quick answer!

tt seems to be indeed related to the fact the board was not reset, so now I am always resetting the Arduino board before running the code in VS. Here's what I tried again.
I reset the arduino board, then ran the sample with the code below within OnButton_Click( ):

Code:
```
System.Diagnostics.Debug.WriteLine("+++----TEST----+++");
System.Diagnostics.Debug.WriteLine("Set pin 14 to ANALOG.");
arduino.pinMode(14, PinMode.ANALOG);
System.Diagnostics.Debug.WriteLine("Reading Pin A0 = " + arduino.analogRead(0));
```

Result printed:
```
+++----TEST----+++
Set pin 14 to ANALOG.
Reading Pin A0 = 65535
```

Then, I reset the arduino again and changed the code to this:

```
System.Diagnostics.Debug.WriteLine("+++----TEST----+++");
System.Diagnostics.Debug.WriteLine("Set pin 0 to ANALOG.");
arduino.pinMode(0, PinMode.ANALOG);
System.Diagnostics.Debug.WriteLine("Set pin 14 to ANALOG.");
arduino.pinMode(14, PinMode.ANALOG);
System.Diagnostics.Debug.WriteLine("Reading Pin A0 = " + arduino.analogRead(0));
```

This code above is within OnButton_Click( ), so when I click first time it returns this:

```
+++----TEST----+++
Set pin 0 to ANALOG.
Set pin 14 to ANALOG.
Reading Pin A0 = 0
```

But when I click the second time, it reads A0 correctly:

```
+++----TEST----+++
Set pin 0 to ANALOG.
Set pin 14 to ANALOG.
Reading Pin A0 = 1023
```

So if I add a delay to the code it returns it correctly the first time I do OnButton_Click( ):

```
System.Diagnostics.Debug.WriteLine("+++----TEST----+++");
System.Diagnostics.Debug.WriteLine("Set pin 0 to ANALOG.");
arduino.pinMode(0, PinMode.ANALOG);
System.Diagnostics.Debug.WriteLine("Set pin 14 to ANALOG.");
arduino.pinMode(14, PinMode.ANALOG);
System.Threading.Tasks.Task.Delay(500).Wait(); //DELAY ADDED
System.Diagnostics.Debug.WriteLine("Reading Pin A0 = " + arduino.analogRead(0));
```

It does seem odd and inconsistent, but that's what I am seeing here. For some reason, if I do not do a arduino.pinMode on pin "0" to ANALOG before doing it to pin "14", analogRead(0) does not work fine. And between doing the arduino.pinMode(14, pinMode.ANALOG) and analogRead(0), there must be a delay to get the reading right first time.

I hope this helps.

 (/turkycat) **Jesse Frush (/turkycat)**
a year ago

Thanks, Deo. You've found a bug! I verified today, and now I understand exactly why only some users are having trouble with this feature. Long story short, it goes back to the difficulty of knowing how the analog pins are numbered for each device (A0 = 14 on an Uno, 54 on a Mega, etc).

I've already been working on a solution for this problem, which will hopefully have the effect of eliminating this need to translate pin numbers back and forth. I spent some time today reviewing the design with a colleague and will be working to fast track the solution as a bug fix. In the meantime, I can say that the AnalogPinUpdatedEvent works correctly, and will correctly fire each time the analog pin is reported. I hope that will help for now!

(/deomel) **Deo Melgaco (/deomel)**
a year ago

Thanks Jesse! Your team is doing great in making all this new stuff available to IoT developers and potential future customers (and IoT hobbyists like me).

I'll test AnalogPinUpdatedEvent next.

 (/turkycat) **Jesse Frush (/turkycat)**
a year ago

Hey Deo,

The library has been updated with what will soon be officially called "version 1.1". In addition to a few big improvements, I have added a few new function overloads which allow you to specify your analog pins with "A0" instead of needing to know the pin number, like 14. The big advantage of this, is that it fixes the problem you identified about a week ago.

https://github.com/ms-iot/remote-wiring (https://github.com/ms-iot/remote-wiring)

In addition, I suggest you now subscribe to the DeviceReady event on RemoteDevice, rather than the ConnectionEstablished event in the IStream object. This DeviceReady event is fired only after the library has been able to identify your board and will correctly be able to map the "A0" and other analog pins to their pin numbers.

```
IStream connection = new UsbSerial( 115200, SerialConfig.SERIAL_8N1 );
RemoteDevice arduino = new RemoteDevice( connection );

arduino.DeviceReady += Setup;
connection.begin();

...
private void setup()
{
arduino.pinMode( "A0", PinMode.ANALOG );
}
```

then you can read your pin values by calling:

arduino.analogRead("A0");

Let me know what you think!

(/Gertt) **Gert 't Hart (/Gertt)**
a year ago

This is real fun for a absolute beginner NOT. To learn something like this it would be nice to have a working example. But now the example is for the preview and not for RTM ☹ my bad

---


(/turkycat) **Jesse Frush (/turkycat)**
a year ago

For now, you can find the up to date samples at: https://github.com/turkycat/windows-remote-arduino-samples (https://github.com/turkycat/windows-remote-arduino-samples)

We are extensively testing them. I appreciate your patience while we get these updated!


(/arishtjain) **Arisht Jain (/arishtjain)**
a year ago

I have made a similar one on android.

(/ManniAT) **Manfred Pohler (/ManniAT)**
a year ago

Running on Yun using Wifi?
Did anyone get this working with an arduino yun using the internal wifi connection?
It works for me when I use usb - but I would like to use WiFi...


(/rhtnryn) **Rohit Narayan (/rhtnryn)**
a year ago

Can we use WiFi instead of Bluetooth?


(/turkycat) **Jesse Frush (/turkycat)**
a year ago

Yes, but you will need a WiFi shield. The instructions can be found on the GitHub repository page for Windows Remote Arduino:
https://github.com/ms-iot/remote-wiring#notes-on-wifi-and-ethernet (https://github.com/ms-iot/remote-wiring#notes-on-wifi-and-ethernet)

(/lememo) **Leandro Meneses (/lememo)**
a year ago

DeviceReady not trigger on LeonardoBoard, i try work with ConnectionEstablished event but analog pins not work

(/lememo) **Leandro Meneses (/lememo)**
a year ago

I used serial comunication (usb cable from pc to arduino leonardo board)


(/turkycat) **Jesse Frush (/turkycat)**
a year ago

This is a known issue with Leonardo boards over USB. Data is not properly sent from a Leo, meaning that the library (WRA) can send commands to the Arduino, but it won't get any responses. Unfortunately, it won't be possible for the library to know which pin is actually pin "A0", for example. If you don't need input, you can always use pinMode() with the raw pin numbers. A0 is pin 14 on a Leo, for example. We're actively working to resolve this issue.

(/lememo) **Leandro Meneses (/lememo)**
a year ago

Thanks Jesse, i replaced Leonardo board, now i use Arduino UNO, it works perfectly.


(/amitchaudhary) **Amit Chaudhary (/amitchaudhary)**
a year ago

Any thoughts/pointer for implementation/reference for sendSysex/sendString. In nutshell Windows 10 IoT device and it's connected Arduino exchanging messages/bidirectional?

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

That functionality is exposed at the UWPFirmata layer. You can look at our implementation of TwoWire, to see how we are using it to send messages back and forth.


(/cjsimon) **Christopher Simon (/cjsimon)**
a year ago

Does the Firmata library also work on iOS and Android? Further, can the Arduino send messages back to the device or is it a one way connection?

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

Firmata is an Open Source, two-way protocol that can be implemented in any language (https://github.com/firmata/protocol/blob/master/protocol.md (https://github.com/firmata/protocol/blob/master/protocol.md)). In version 1.1 we are utilizing the .cpp and .h provided in the repo, so you should be able to do the same thing in Android and iOS.
The remote-wiring library allows you to instantiate a "virtual" Arduino and communicate back and forth (read/write) with the Arduino.

(/gerardohp) **Gerardo Hernandez (/gerardohp)**
a year ago

Hey guys I `ve download the maker projects from GitHub and added to my solution, but I` m not able to add the references to those projects I get a message like this:
Unable to add reference to Project 'Microsoft.Maker.Firmdata', I currently have installed Visual Studio Version 14.0.23107.0 D14REL
and Visual Studio Tools for Universal Windows Apps 14.0.23121.00 D14OOB

> 
> (/turkycat) **Jesse Frush (/turkycat)**
> a year ago
>
> I'm using the same versions for both right now, and I've never seen that message. Have you added the projects to your solution before adding references? Are you following the project setup guide here: http://ms-iot.github.io/content/en-US/win10/SetupPCWRA.htm (http://ms-iot.github.io/content/en-US/win10/SetupPCWRA.htm)
>
> > (/zachary_fields) **Zachary J. Fields (/zachary_fields)**
> > a year ago
> >
> > I can't help but notice you typed, "... Firm**data**". Is that a typo on your post or on your project?


(/hanksatnick) **Hank Satnick (/hanksatnick)**
a year ago

Hi Gang, I just loaded up VS2015 and got Blinky working. Just thought I'd add that it works great with the Sparkfun Bluetooth Mate Gold and a random HC-06 off of eBay. The BTMG runs native at 115200 and the HC-06 runs at 9600 baud. Can't wait to see what else Win 10 and iot can do!

(/MdRatKW1C) **MdRatKW1C (/MdRatKW1C)**
a year ago

Hi there,

I'm exploring Arduino and Windows10. There fore I used the information of the website https://microsoft.hackster.io/windowsiot/basic-windows-remote-arduino (https://microsoft.hackster.io/windowsiot/basic-windows-remote-arduino). Arduino in combination woth a Windows Store App (Windows Universal App) is working well. Now, I want to create a sideloaded app. After creating the app-package and installing it with power-shell the usb-communication doesn't work any more.

Before sideloading the Package.manifest consist of:

<Capabilities>
<Capability Name="internetClient" />
<DeviceCapability Name="serialcommunication">
<Device Id="any">
<Function Type="name:serialPort" />
</Device>
</DeviceCapability>
</Capabilities>

After sideloading the Package.manifest is changed into:

<Capabilities>
<Capability Name="internetClient" />
</Capabilities>

Can someone help me? Thank you.

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

When you say "sideload", do you mean compile and deploy directly from VisualStudio 2015. If not, that is the preferred and heavily tested method we use. If you can write back with some more details, perhaps we can provide more assistance.

(/MdRatKW1C) **MdRatKW1C (/MdRatKW1C)**
a year ago

I'm running Visual Studio 2015 on Windows 10. For a Windows Store App (Windows Universal App) the above information is working well. I created it with C# and with C++. Then I tried to create a LOB. For sideloading I used the information of https://msdn.microsoft.com/en-us/library/hh454036.aspx (https://msdn.microsoft.com/en-us/library/hh454036.aspx). I completely followed the information of the MSDN-link. Sideloading (Run with PowerShell -> Deploying results into 'Application is successfully installed') was working well, the sideloaded app was working well, but there was no usb-communication! I was looking for some information inside de files of the sideloaded app, and up to now the only thing I can find is the changed Package.manifest. The capability for using the usbport is missing. It's a mystery to my.

(/MdRatKW1C) **MdRatKW1C (/MdRatKW1C)**
a year ago

Dear Zak,

Is it possible to send you my solution? Maybe it is easier to investigate my problem.

Best regards, MdRatKw1c

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

Yes, that sounds fine. Please private message me with a share link to cloud storage (i.e. dropbox, box.com (http://box.com), OneDrive, etc...).

(/MdRatKW1C) **MdRatKW1C (/MdRatKW1C)**
a year ago

Dear Zak,

This morning I tried it all again, and its working now. I think i forgot, the first time, to copy the right directory with references. I am glad and i am sorry to ☺ Good luck with your Arduino-work and I will follow Hackster.io (http://Hackster.io).

 (/colossus-deckard-15) **Ladi Abhishek (/colossus-deckard-15)**
a year ago

Hi guys,
I have done with coding as it is in this project, configured for Bluetooth.
But the app i created is not installing in the windows 8.1 version phone.
Guys please help me in this.

Thanks in advance.

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

Quick checklist:

- Is the phone developer unlocked?
- Was the screen unlocked when you attempted to deploy?
- Were you connected via USB?
- Did you select "Device" as your deployment target in Visual Studio?
- Have you been able to install any other applications on your phone?
- Which version of Windows and Visual Studio are you running?
- Which version of Windows Phone are you running?

If you can answer these questions it will help provide some context for us to start out.

Thanks,
Zak

 (/colossus-deckard-15) **Ladi Abhishek (/colossus-deckard-15)**
a year ago

Thanks Zachary,
It's a windows 8.1 updated phone.
And i am using Visual studio 2015.
And i have no idea how to unlock developer mode.

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

Here's a link I found on MSDN. It references Windows Phone 8.0, but the steps will be nearly identical. Once you download the Windows Phone 8.1 SDK, you will get the Windows Phone Developer Registration tool.
https://msdn.microsoft.com/en-us/library/windows/apps/ff769508(v=vs.105).aspx (https://msdn.microsoft.com/en-us/library/windows/apps/ff769508%28v=vs.105%29.aspx)

 (/colossus-deckard-15) **Ladi Abhishek (/colossus-deckard-15)**
a year ago

Thanks a lot....😊
Zac, could u help me in creating a push button for windows 8.1 mobile.
It should function like :
when I press it should call a function for switching on the LED.
And when release button The LED should switch off.
I have tried with Ispressed property, but couldn't done with that.

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

Check out these two file from another project I worked on:
https://github.com/ms-iot/piano/blob/master/build2014-piano/MainPage.xaml (https://github.com/ms-iot/piano/blob/master/build2014-piano/MainPage.xaml)
https://github.com/ms-iot/piano/blob/master/build2014-piano/MainPage.xaml.cs (https://github.com/ms-iot/piano/blob/master/build2014-piano/MainPage.xaml.cs)

I had a similar problem when I made a touch screen piano. Pay particular attention to the `void WhiteKey_PointerPressed(object sender_, PointerRoutedEventArgs e_) {}` function; I think that is what you need.

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

If you are interested in that project, it is also hosted here on hackster.io (http://hackster.io) (https://www.hackster.io/windowsiot/build-2014-piano (https://www.hackster.io/windowsiot/build-2014-piano)).

(/enigma-newton-14) **Adwin Leong (/enigma-newton-14)**
a year ago

I have been trying to use a arduino ethernet board with a standardfirmata ethernet , but i cant seems to make it work , does anyone have a sample to guide me ☹

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

Did you read the "Notes on WiFi and Ethernet" section in the README.md (http://README.md)? Also you can check (https://github.com/turkycat/standard-firmata-networking (https://github.com/turkycat/standard-firmata-networking)) for more details.

(/enigma-newton-14) **Adwin Leong (/enigma-newton-14)**
a year ago

So to perform a basic blinky window remote arduino on (Arduino ethernet + standardfirmata ethernet) , PlatformIO is needed ? From what i read from the link .

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

I believe that is only necessary for Unix/Mac, you will only need to follow the steps from "Option 2: (Best for Windows)". Between that and (https://github.com/ms-iot/remote-wiring#notes-on-wifi-and-ethernet (https://github.com/ms-iot/remote-wiring#notes-on-wifi-and-ethernet)), I think you will be good to go.

(/enigma-newton-14) **Adwin Leong (/enigma-newton-14)**
a year ago

Tried according to the guide , still unable to solve it , is it okay if I send you my solution , so you can help me take a look?

(/enigma-newton-14) **Adwin Leong (/enigma-newton-14)**
a year ago

My main problem would be the connection between the visual studio & arduino. Cant seem to connect it.

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

We may need to call it out more clearly in the documentation, but you should be using the Arduino IDE to install all software on the Arduino. You will then write a Windows program (using Visual Studio) that will be installed on any Windows 10 device (Desktop, Tablet, Mobile Phone or the IoT Core) and will be able to communicate with the Arduino by using the remote-wiring library.

(/enigma-newton-14) **Adwin Leong (/enigma-newton-14)**
a year ago

I had a Windows program(using visual studio) and
the Arduino IDE(StandardFirmataEthernet). I just couldnt find which part that i had done wrong in the codes.


(/scottwrobinson) **Scott Robinson (/scottwrobinson)**
a year ago

Very cool. Looks like remote-wiring could be a good non-JavaScript alternative to Johnny Five. I wonder, is there any intention to eventually support pre-Windows 8.1 in remote-wiring?

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

I'm glad you like it! It's open-source and we do accept pull-requests, so it can really go wherever the community is willing to take it. However, we have finite time and resources, so our current strategy is to stay up-to-date with Windows. Windows 8.1 is where it all started, which you can see by the source, and now we are putting our energy into making a great Universal Windows Runtime Component (Windows 10) and experience.


(/jakestorm96) **Andre Cauilan (/jakestorm96)**
a year ago

Hi ! how come I could not install the NuGet package for windows phone 8.1? I could only install it for a universal windows app, NOT a UNIVERSAL WINDOWS 8.1 app.
Please Help ☹


(/user737368577) **Peter Jey (/user737368577)**
a year ago

Sooo excited to connect to my windows 10 phone to my Arduino, but I'm not quite there. I have followed the excellent

project above. But the connection is never made with the Arduino. I am using Bluetooth - I have downloaded the code from Github, I have wired up the hardwear (Tx to Rx etc), I have experimented with the baud rate (I have matched the rate in the Firmata on the Arduino and in the code - e.g. 57600). I have changed the code to account for the name of the Bluetooth module (Firefly-106D) The project all loads, but the On/Off buttons don't become enabled (as - I believe the connection is never made). The Bluetooth module continues to flash red, but doesn't turn green. I can make it turn green, by manually pairing the phone with the module. But to do that I have to delete the instance of the Bluetooth device (Firefly-106D) first - then 'tap to pair'. The code however, still does not recognise the connection has been made and the buttons remain inactive. The module is - sparkfun Blue Smirf - <I haven't entered the passcode anywhere (1234)> Not sure where this info goes. I hope I've included enough information for someone to help me. Any positive help would be appreciated. Pete

---

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

Hi Pete!

I'll give you a quick checklist before we go deep.

1. Know the baud rate of your Bluetooth dongle. Is it 115200, 57600, 9600, etc.?
2. Update the StandardFirmata.ino sketch on the Arduino to use the baud rate of your dongle (default is 57600).
3. Wire up TX and RX. This can actually be tricky, because TX from the Arduino goes to RX on the dongle. However some manufactures may try to be helpful and label these pins differently. If you are uncertain, get an oscilloscope and check.
4. Use the Windows 10 Bluetooth panel to pair.
5. Launch the experience, and select Bluetooth connection option.

Can you confirm these 5 steps?

Thanks,
Zak


(/turkycat) **Jesse Frush (/turkycat)**
a year ago

Hey Pete, Zak's advice above is all good stuff. I'll add to it and see if between the two of us we can get this connected.

I know that when a pair is first made through the Bluetooth settings, it typically does open a connection for a short period, so that is why the green light turns on for a bit after a new pair. When you pair though, it is not asking you for a pin to pair to the device? You should have to enter '1234' only once, when you first pair to the device.

I noticed you said you're using the SparkFun Blue Smirf, but the device name is Firefly-106? Did you rename the device? That is fine if you did, but typically the device names for these are "RNBT-####". I also happen to know that the Blue Smirf uses 115200 as its default baud rate. For Bluetooth connections, you need to make sure that the Firmata side matches what the Bluetooth device is set to (the Windows side actually doesn't matter what value you use for 'baud rate' when using Bluetooth, and an update coming soon will make that more clear). I can also say that the baud rate won't affect the actual Bluetooth connection process, but will determine if the devices can talk to each other once the connection is made. In other words, if the light never turns green on the Blue Smirf, the baud rate hasn't become a factor yet.

Last, I'm curious if you are using a sample, the Remote Arduino Experience app, or writing your own project? If it is your own project, can you share the connection code you've written?

Peter Jay (/user737368577)

(/user737368577) **Peter Jey (/user737368577)**
a year ago

Hi Zak/Jesse, thanks for your response. I'll try to answer your queries. I have used both baud rates (115200 and 57600) and each time have matched them in the code and the firmata. Sounds like I should stick to 115200. With respect to software I have used the 'remote-wiring-develop' folder on GitHub. I loaded the three projects in Microsoft.Maker.win10 (Microsoft.Maker.Firmata, Microsoft.Maker.RemoteWiring, Microsoft.Maker.Serial). I added the dependancies and references, added the using statements to the page etc. The code (not my own - the code above) runs fine on the phone (which has recently had the Windows 10 insider preview added) - but the connection is not made??? For simplicity, perhaps I should avoid the code for now and go with the experience app. When the app runs, the Bluetooth device connected to the Arduino does not appear, even after selecting each baud rate and refreshing. I hope some of this helps. Again thanks for your support! Pete

---

(/user737368577) **Peter Jey (/user737368577)**
a year ago

Oh sorry... and the sparkfun module shows on my phone as Firefly-106D
I didn't modify this. Update...
So I've now gone with the Experience app rather than than Visual Studio. If I run the app - the device doesn't show, but I can manually discover the device (Firefly-106D) and connect through the settings on the phone. The module permenantly turn green - but still not visible in the app. Cheers Pete

---

(/user737368577) **Peter Jey (/user737368577)**
a year ago

BTW - I haven't been asked for the 1234 passcode at any point - so I assume the problem lies here somewhere<?>

(/user737368577) **Peter Jey (/user737368577)**
a year ago

More info... My module is the Sparkfun BlueSmirf HID (not silver or gold - it is configured as a Human Input Device) - could this be the root of my problem?? - https://www.sparkfun.com/products/retired/10938 (https://www.sparkfun.com/products/retired/10938)

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

Yes, the HID is your problem (we experienced this during the development of remote-wiring). I have read it is possible to alter the firmware to make it act as the Silver, although it looks involved and I have never done it myself.
https://flashandrc.wordpress.com/2014/10/04/hid-firmware-on-hc-06-bluetooth-modules/ (https://flashandrc.wordpress.com/2014/10/04/hid-firmware-on-hc-06-bluetooth-modules/)

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

The last comment on this post (https://www.sparkfun.com/products/12574 (https://www.sparkfun.com/products/12574)) says there is a flag in the v6.15 firmware that can be flipped to enable SPP or HID. It looks easy if it works. Happy hacking!

 (/user737368577) **Peter Jey (/user737368577)**
a year ago

Thanks so much for the pointer - I'll search for some info on changing the firmware - Pete

 (/user737368577) **Peter Jey (/user737368577)**
a year ago

OK I've made some progress, but not cracked it. This Sparkfun article was useful to enter the modules configuration and this datasheet helped with the advanced settings. I have changed the module from HID to SPP using the Arduino serial monitor. The device is now visible in the Remote Arduino Experience App. But the connection cannot be made because the PIN is not verified. I have played with the Authentication options (SA, <x>) but no progress. The settings of the module are...

Settings
BTA=0006664E106D
BTName=FireFly-106D
Baudrt(SW4)=9600
Mode =DTR
Authen=1
PinCod=1234
Bonded=0
Rem=NONE SET

ADVANCED Settings
SrvName= SPP
SrvClass=0000
DevClass=1F00
InqWindw=0060
PagWindw=0060
CfgTimer=60
StatuStr=NULL
HidFlags=200
DTRtimer=8
KeySwapr=0

I get the same error on my phone and desktop when trying to connect to the module. Pin is not verified. I have also had the error - A socket operation was attempted to an unreachable network.
If you have any advice on what maybe wrong - it would be appreciated. Pete

 (/user737368577) **Peter Jey (/user737368577)**
a year ago

Sorry realised I hadn't referenced the useful documents -
Sparkfun tutorial - https://learn.sparkfun.com/tutorials/using-the-bluesmirf/all (https://learn.sparkfun.com/tutorials/using-the-bluesmirf/all)
Datasheet - https://cdn.sparkfun.com/assets/1/e/e/5/d/5217b297757b7fd3748b4567.pdf (https://cdn.sparkfun.com/assets/1/e/e/5/d/5217b297757b7fd3748b4567.pdf)

 (/turkycat) **Jesse Frush (/turkycat)**
a year ago

After you've switched the profile to SPP, you should unpair and repair the device. The device profile determines how it pairs, and HID devices typically use the "just works" strategy, which requires no pin. This is typically used

how it pairs, and HID devices typically use the "just works" strategy, which requires no pin. This is typically used for mice, keyboards, speakers, headphones, etc

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 (/user737368577) **Peter Jey (/user737368577)**
a year ago

Update - Eventually I got my hands on a Sparkfun Mate Silver (I tried all of the above with my HID Bluetooth module) - The Silver version worked with the Arduino remote experience app straight away. Unfortunately now I want to develop my own project, but in the remote-wiring repository on GitHub I cant find the file Microsoft.Maker.Serial - that is needed for the project. Can anyone tell me - Am I looking in the wrong place - https://github.com/ms-iot/remote-wiring/tree/develop/Microsoft.Maker.win10 (https://github.com/ms-iot/remote-wiring/tree/develop/Microsoft.Maker.win10) - or has it disappeared for some reason?

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

`serial-wiring` (a.k.a. Microsoft.Maker.Serial) is in its own repository, and is submoduled by `remote-wiring`. If you clone `remote-wiring` with the `--recursive` flag, then you will get them both.

 (/user737368577) **Peter Jey (/user737368577)**
a year ago

Thanks Zac - I used the NUGET method rather than adding the projects manually. Worked a treat. Never been so excited to see a small LED go on and off! Big thank you to all the team. Pete

---

(/mohanp) **Mohan Palanisamy (/mohanp)**
a year ago

This project was using Bluetooth and Usbserial on Windows Remote Arduino.. If you have an Arduino Yun (are any board that runs Linux) see this project on how to take advantage of the WiFi and NetworkSerial on WRA.. https://www.hackster.io/mohanp/windows-remote-arduino-yun-wifi-and-networkserial-b3290a (https://www.hackster.io/mohanp/windows-remote-arduino-yun-wifi-and-networkserial-b3290a)

(/user52705) **Colin MacKenzie (/user52705)**
a year ago

This is great stuff! Really excited to try and control Arduino sensors using my Windows Phone all through c#!

My first test is a basic program to read a MCO9808 Temperature sensor through I2C. I've set it up and it works ok in that I get the correct reading but it doesn't refresh every time I want it to. Basically about 1 in every 10 of the calls I make returns.

On a bit more investigation I can see that the arduino.I2c.requestFrom call buffers on the Read reply on the Arduino. Basically the Arduino receives each of the writes and then when it hits 64 characters sends back all the reads in one go which fires the delegate for each of the calls I made.

Does anybody know if there is a setting I can set on either the Firmata sketch or through UWPFirmata to just push the responses back straight away?

Thanks in advance.

(/shady) **Aaron (/shady)**
a year ago

when I call RemoteDevice's constructor, my app throws a bunch of: Exception thrown at 0x766BD8A8 in GarageOpener.exe: Microsoft C++ exception: EETypeLoadException at memory location 0x116BD944.

Does calling the BluetoothSerial constructor connect the Bluetooth device with windows? If so its not, my module just blinks red. Please Help.

(/shady) **Aaron (/shady)**
a year ago

I'm also trying the usb connection but same exception. Used the correct id numbers. any ideas why I'm getting an excpetion when I try to connect the remote device?

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

The constructor does not establish a connection, the call to `IStream::begin()` establishes the connection, and it fires the event `IStream::ConnectionEstablished`.


(/turkycat) **Jesse Frush (/turkycat)**
a year ago

it is better to listen for the `RemoteDevice::DeviceReady` event to be fired, as this occurs after the connection is established and a handshaking procedure has completed between Remote Arduino and the device!

(/shady) **Aaron (/shady)**
a year ago

I'm using usb and my DeviceReady event doesn't fire. I changed up my code a little and saw this in the console window: WinRT information: Unable to initialize the device. Did you forget your USB device capabilities in the manifest? I'm guessing I have to manually edit the manifest since I don't see anything about usb in the designer?


(/turkycat) **Jesse Frush (/turkycat)**
a year ago

make sure you're using the USB capabilities in the manifest as listed at the bottom of this page: https://github.com/ms-iot/remote-wiring/blob/develop/installation.md#enabling-usb-capabilities (https://github.com/ms-iot/remote-wiring/blob/develop/installation.md#enabling-usb-capabilities)

(/shady) **Aaron (/shady)**
a year ago

Thanks, device ready seems to fire now so I'm guessing it works(more testing later). Are all those EETypeLoadException's normal when I call IStream.begin()?

 (/turkycat) **Jesse Frush (/turkycat)**
a year ago

Are these UnhandledExceptions? Does your app crash? I haven't seen those myself, but if they are handled, it could be signs that something is behaving a bit odd but not causing a fatal error in the program. If you are getting DeviceReady, it means that not only are you successfully connecting (`IStream::ConnectionReady` has fired) but also that an exchange of data (handshake) has successfully completed between the device and the library.

(/user24330) **user24330 (/user24330)**
a year ago

Nice Project, it helped me a lot to read my IR-Sensors. But is it possible to controll an adafruit motor shield? Can anybody help me? Sorry for my bad english.

 (/turkycat) **Jesse Frush (/turkycat)**
a year ago

How does that motor shield work? Do the pins accept PWM? If so, set the pins to `PinMode::PWM` and use `analogWrite()` like an Arduino sketch.
If the shield isn't so simple and requires a library, you need to use sysex commands. Refer to the advanced documentation here: https://github.com/ms-iot/remote-wiring/blob/develop/advanced.md (https://github.com/ms-iot/remote-wiring/blob/develop/advanced.md)

 (/peterfjorgensen) **Peter F. Jørgensen (/peterfjorgensen)**
a year ago

Really Cool! 😄
Using your sample code and project description I succeeded activating an IO pin on my Arduino Pro Mini clone via a Bluetooth connection from several Windows devices.

I have it up and running on these devices:

- Arduino Nano clone with "StandardFirmata.ino" + Bluetooth module "HC-05", 9600 Baud
- Windows Phone 8.1 "Nokia Lumia 930" with builtin Bluetooth
- Windows 10 Laptop with builtin Bluetooth
- RaspberryPi 2 model B with "Windows 10 IoT Core" (10.0.10586), and a cheap Bluetooth hardware dongle

On my development PC I'm using Visual Studio 2015 (with latest updates) and all I had to do to get it working was change the project references in Project->Properties to the target platform version (from 10.0.0.0 to 10.0.10586.0) in the referenced "Microsoft.Maker.*" projects in the solution.
Also I changed the name in the C# code of my Bluetooth module to "HC-05".
Rebuilt all and perform the required pairing of the Bluetooth devices.

This is a very simple demo program showing how to flip a hardware IO pin, but the potential this has is not to describe - actually!

I can't wait to make something useful with this 😄

Great work and many thanks to the Microsoft team that made this possible.

Peter

(/user37763) **Danton Barnes (/user37763)**
a year ago

I'm having some serious issues. I can't even get the references to work in my project much less get to the point of actually running it. I have a post on the developers network below if anyone can help: https://social.msdn.microsoft.com/Forums/en-US/559b6f47-a17a-4020-83c3-7fa3da549067/visual-studio-community-2015-and-adding-existing-projects-problems?forum=WindowsIoT#559b6f47-a17a-4020-83c3-7fa3da549067 (https://social.msdn.microsoft.com/Forums/en-US/559b6f47-a17a-4020-83c3-7fa3da549067/visual-studio-community-2015-and-adding-existing-projects-problems?forum=WindowsIoT#559b6f47-a17a-4020-83c3-7fa3da549067)

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
a year ago

> I just put together a test app, and I was not able to reproduce your error.
>
> Here are my steps:
>
> 1. Install the Windows-Remote-Arduino NuGet package
> 2. Specify `using Microsoft.Maker.Serial;` and `using Microsoft.Maker.RemoteWiring;` at the top of your C# program, or `using namespace Microsoft::Maker::Serial;` and `using namespace Microsoft::Maker::RemoteWiring;` at the top of your C++ program.
> 3. Add `IStream stream = new BluetoothSerial("RNBT-5012");`, `RemoteDevice arduino = new RemoteDevice(stream);` and `stream.begin(115200, SerialConfig.SERIAL_8N1);`. Again, this is C# Syntax, so be sure to tailor to your device, not mine.
>
> Hopefully these steps will get you going

(/erviveksoni) **Vivek Soni (/erviveksoni)**
9 months ago

How can we connect multiple arduino devices (slaves) to a single (master) Raspberry Pi using this library over Bluetooth communication?

> (/zachary_fields) **Zachary J. Fields (/zachary_fields)**
> 9 months ago
>
> Theoretically, yes. However, in the past, there was a hang-up in the Windows Bluetooth stack. To be honest, I haven't tried it in a while, and I would love it if you would give it a shot and reply back.
>
> Cheers,
> Zak

> (/erviveksoni) **Vivek Soni (/erviveksoni)**
> 9 months ago
>
> Sure, will give a shot and let you know!

> (/erviveksoni) **Vivek Soni (/erviveksoni)**
> 9 months ago
>
> One more quick question, I have an DHT 11 sensor on my Arduino and the sensor comes with their own libraries for reading the data.
>
> In case of remote ardunio, how is this going to work and read the data?

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
9 months ago

You will create a special Sysex command for Firmata.
You add the DHT11 library to the StandardFirmata sketch from the Arduino "Examples". Then you add handling for a special Sysex command (a user-defined byte code) that will invoke the reading function and return the result. This practice is outlined under the advanced usage documentation.

(/erviveksoni) **Vivek Soni (/erviveksoni)**
9 months ago

Thank you Zac. Will check it out!

https://github.com/ms-iot/remote-wiring/blob/develop/advanced.md (https://github.com/ms-iot/remote-wiring/blob/develop/advanced.md)


(/jakestorm96) **Andre Cauilan (/jakestorm96)**
9 months ago

Hi, I'm using a DFRobot Bluno board, and I'm running a Windows 10 phone. I've downloaded the Windows Remote Arduino Experience App, and I've uploaded the StandardFirmata sketch to Bluno as well. Windows Remote Arduino Experience doesn't list the Bluno when I use the bluetooth connection settings, but it works fine for USB (on laptop). How do I get it to show up on the app? Is there a difference between BluetoothSerial and DFRobotSerial?

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
9 months ago

Yes, your suspicions are correct. There is a difference between BluetoothSerial and DFRobotBleSerial. DFRobotBleSerial is a Bluetooth Low Energy connection, which is fundamentally different from Bluetooth and they are not interchangeable.


(/jakestorm96) **Andre Cauilan (/jakestorm96)**
9 months ago

Do I simply replace all the BluetoothSerial commands with DFRobotBleSerial then in the Windows Remote Arduino Experience App? How do I list the devices as well using DFRobotBleSerial>

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
9 months ago

Yes. All of the components of serial-wiring adhere to the `Microsoft::Maker::Serial::IStream` interface, so it should be easily swapped.

(/Radar) **Raivo (/Radar)**
7 months ago

Hi,
I'm using a Arduino/Genino MKR1000 board with the Windows Remote Arduino Experience App.

I'm using a Arduino/Genuino MKR1000 board with the Windows Remote Arduino Experience App.
After uploading the StandardFirmata sketch to the board, Windows Remote Arduino Experience connects to the board without any problems, both USB and Bluetooth connetctions work fine.
Now when running the StandardFirmataWiFi sketch on the board, Windows Remote Arduino Experience fails to connect with the following Error Message :

"Connection attempt failed. A device connection was established, but the device failed handshaking procedures. Verifiy that your device is configured with StandardFirmata. Message : Catastrophic Failure Pin configuration not received."

I'm using version 1.6.9 of the Arduino ide.
Firmata Library v 2.5.2
WiFi101 v 0.9.1

(Enabling the Serial Monitor when running StandardFirmataWiFi shows no problems, an ip-address is obtained so the board is connected to the network)

Any ideas what the problem might be ?


(/bakiguher) **Manuel Calavera (/bakiguher)**
7 months ago

same problem here, i put internet upside down to find a solution. but nothing.

(/zachary_fields) **Zachary J. Fields (/zachary_fields)**
7 months ago

Thanks for reporting this, we'll look into it as we have time. Would you mind posting an issue at `https://github.com/ms-iot/remote-wiring` ?

(/Radar) **Raivo (/Radar)**
7 months ago

Done.

https://github.com/ms-iot/remote-wiring/issues/101 (https://github.com/ms-iot/remote-wiring/issues/101)

Thx

(/CookieCube) **CookieCube (/CookieCube)**
6 months ago

This is awesome! Its like an iSheeld excpept for W10! You could make a huge app from this!

(/inge87) **inge87 (/inge87)**
5 months ago

Buen día
Me parece muy bueno el aporte, lo que yo recomiendo es utilizar otros dos pines digitales para Rx/Tx (no utilizar por defecto) y así no tener problemas de comunicacion.

Gracias y saludos desde Colombia.
